

## REMARKS

### Claim Rejections Under 35 U.S.C. § 102

Claims 1 and 4-14 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,167,483 to Shigenori Miyauchi (“Miyauchi”). However, no *prima facie* case of anticipation has been stated with respect to claims 1 and 4-14. Under 35 U.S.C. § 102(b), all claim elements must be shown. “To anticipate a claim, the reference must teach every element of the claim,” MPEP 2131. The Office Action did not indicate which features of Miyauchi could correspond to the elements of claims 1 and 4-14, and thus failed to state a *prima facie* case of anticipation. For example, with respect to claim 1, certain portions of the specification were cited, but no indication was given as to which features in the cited portions (if any) could correspond to the elements of claim 1. Because no features of Miyauchi were identified as corresponding to claim elements of claims 1 and 4-14, it is not clear how an anticipation rejection might be made based on Miyauchi. Some particular elements of claims 1 and 4-14 that were not found in cited portions of Miyauchi are discussed below. It is requested that any future rejection based on Miyauchi distinctly identify features of Miyauchi corresponding to all claim elements, especially the claim elements discussed below.

With respect to claim 1, the cited portions of Miyauchi do not appear to teach, “reassigning the boundary addresses to delete at least one unit from each of the zones and to add said at least one unit to an adjacent zone without changing the number of units in the individual zones.” Similarly, “repetitively reassigning the boundary addresses and accessing the zones...” do not appear to be taught by the cited portions. While no correspondence between elements of claim 1 and features of Miyauchi has yet been indicated, at least these elements of claim 1 do not appear to be taught by Miyauchi. It is requested that any future rejection identify features in Miyauchi corresponding to these claim elements, in particular identify features corresponding to, “boundary addresses,” “zones” and “an adjacent zone.”

Claim 1 is amended without prejudice to add “plurality of” qualifying “memory cell units.”

With respect to claim 5, no specific features of Miyauchi were identified as “a plurality of pages that are individually programmable with data.” No such pages appear to be taught by cited portions of Miyauchi, so claim 5 appears to be additionally allowable.

Figure 6 recites, “copying any data stored in said at least one unit from each of the zones into the added unit of the adjacent zone.” No such copying from a zone to an adjacent zone was found in the cited portions of Miyauchi.

With respect to claims 7 and 8, the Office Action stated, “they encompass the same scope of invention as to that [sic] of claim 1 except that the claims are drafted as method format rather than apparatus format, the claims are therefore rejected for the same reasons.” Because no *prima facie* case of anticipation was stated with respect to claim 1, similarly, no *prima facie* case of anticipation is stated with respect to claims 7 and 8. Furthermore, it is pointed out that claims 7 and 8 are different to claim 1 in several respects, not only because they are method claims. Therefore, even if a *prima facie* case of anticipation were shown with respect to claim 1, this would not necessarily mean a *prima facie* case would be shown with respect to claims 7 and 8. In addition, portions of Miyauchi cited with respect to claim 1 do not appear to teach certain elements of claims 7 and 8. For example, “removing a portion of the individual physical groups including at least one erase unit at a time and adding the removed erase units to adjacent ones of the physical groups in a manner that maintains a uniform number of erase units in the individual physical groups,” of claim 7 does not appear to be taught. Also, “repetitively re-defining the individual zones by removing at least one block therefrom in each plane and adding the removed blocks to others of the zones in their same planes,” of claim 8 does not appear to be taught by the cited portions of Miyauchi.

With respect to claim 9, the cited portions of Miyauchi do not appear to teach, “a logical address within the distinct logical address range of one of the zones.” In particular, it is not clear which features of Miyauchi could correspond to “the distinct logical address range of one of the zones.”

With respect to claim 11, “swapping physical addresses of the erase units within said one zone that have a highest and a lowest accumulated number of usage cycles” does not appear to be taught by the cited portion of Miyauchi. In particular, it is not clear what features of Miyauchi could be considered “one zone.”

With respect to claim 13, “exchanging data in a first of the plurality of zones with data stored in a second of the plurality of zones,” does not appear to be taught by the cited portion of Miyauchi. In particular, it is not clear what features of Miyauchi could be considered as first and second of the plurality of zones.

With respect to claim 14, “moving data from an erase unit of the first zone having a physical address adjacent a border of physical addresses of the first zone into said first unit,” does not appear to be taught by the cited portion of Miyauchi. In particular, it is not clear what features of Miyauchi could be considered as “the first zone” or a “physical address adjacent a border of physical addresses of the first zone.”

In summary, the Office Action fails to state a *prima facie* case of anticipation of claims 1 and 4-14 based on Miyauchi. It is unclear which features of Miyauchi might be considered to correspond to particular claim elements. Certain claims recite limitations regarding zones and zone boundaries where no corresponding features have been shown in Miyauchi. While it is not believed that there is any necessity to respond where a *prima facie* case has not been stated, the above comments are made without prejudice to highlight a few of the claim elements of claims 1 and 4-14 that do not appear to be taught by Miyauchi. These claim elements are exemplary and are not intended to form an exhaustive list.

Claims 15-27 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,963,474 to Uno et al. (“Uno”). As with respect to claims 1 and 4-14 above, the Office Action fails to state a *prima facie* case of anticipation because the Office Action fails to identify particular features of Uno that correspond to all the claim elements of claims 15-27. Furthermore, inasmuch as this rejection is understood, certain claim elements do not appear to be taught by the cited portions of Uno. Some of these claim elements are discussed below.

Claim 15 recites, “incoming data are programmed into those of the plurality of physical blocks maintained as an erased block pool.” The Office Action indicated that these claim elements were taught by certain unidentified features in the abstract of Uno. However, the abstract appears to refer to what happens, “When the number of repetitions of erasure in a second block area has reached a predetermined reference value.” This does not appear to refer to “incoming data.” In addition, it is not clear what feature is considered an erased block pool. It is noted that the “alternate block area” appears to hold data prior to the operation described. “A

second writing unit writes information which has been stored in the alternate block area, into the second block area.” Abstract, lines 7-9. Thus, it is not seen how the alternate block area could be considered as an erased block pool.

Furthermore, claim 15 recites, “cycling through the plurality of addresses of the plurality of blocks in a predefined order.” The portion of text cited in the Office Action as showing this claim element (column 1, lines 50-55) refers to updating data. “Provided that the information with the logical number 2, for example, is to be updated ...” column 1, lines 51-52. It is not seen how this corresponds to cycling in a predefined order.

Claim 17 recites, “erasing the identified at least one of the plurality of physical blocks and placing the erased at least one block into the erase pool.” The Office Action cited column 6, lines 40 *et seq.* as teaching these features. However, no reference to an erase pool was found in this portion of text.

Claim 18 recites, “identifying at least one of the plurality of physical blocks for a wear leveling exchange is accomplished without reference to a number of erase cycles.” The Office Action indicated that this was taught by column 1, lines 58 *et seq.* of Uno. However, the cited portion of text refers to what happens, “if the limit is exceeded,” (column 1, lines 58-59), which appears to refer to the erasure count of the previous sentence. “If, as a result, the count of erasure operations does not exceed a limit ...” column 1, lines 55-57. Thus, it is not clear how this could be considered “without reference to a number of erase cycles.”

Claim 19 recites, “identifying at least one of the plurality of physical blocks at a time includes doing so at intervals of a predetermined number of the plurality of physical blocks within the erased block pool.” Column 9, lines 25 *et seq.* of Uno were indicated as teaching these limitations. However, no particular features were identified and corresponding features were not found in the cited portion of text. Column 9, lines 25 *et seq.* appears to discuss use of a write cache. “If an update for the same data is written again before the predetermined time elapses, then the data is updated in the write cache area.” Column 9, lines 26-29. It is not seen how such a write cache is related to the limitations of claim 19.

Claim 20 recites, “an additional number of physical blocks providing an erased block pool” and “in response to requests to store data in at least one of the range of logical block addresses ... writing the data into said at least one physical block of the erased block pool.” The Office Action appeared to cite column 1, lines 51-58 of Uno as teaching these claim elements.

However, it is not understood how the cited portion could be considered to teach an erased block pool. “Provided that the information with the logical number 2, for example, is to be updated ... update information is written into the block area with the physical number 2.” Column 1, lines 51-58. The block area with physical number 2 would not appear to be from an erased block pool because it is described as a block “in which the information with the logical number 2 has been stored until then,” column 1, lines 53-54. Thus, it is not clear how the cited portion of Uno could support an anticipation rejection.

Claim 21 recites, “identifying physical blocks includes determining whether the identified physical block is within the erase block pool or subject to a pending program operation, in either case the identified physical block is not exchanged.” The Office Action cited column 10, lines 12 *et seq.* as teaching these claim elements. However, the cited portion of text appears to relate to an erase operation. “Then, the information stored in the information area and the data area of the block P is erased (S39).” Column 10, lines 12-13. It is not clear how such erasing is considered related to the determining of claim 21. Thus, it does not appear that the cited portion of Uno would support an anticipation rejection of claim 21.

Claim 23 recites, “after copying the data, of erasing the identified one of the plurality of physical blocks and placing the erased at least one block into the erased block pool.” The Office Action cited column 10, lines 21 *et seq.*, which appears to describe possible outcomes of an erase operation that is not performed normally. Two outcomes are disclosed, “If there still exists a spare block in the flash memory 20, the write process is ended (S43). If there is no spare block remaining, the life of the flash memory 20 is regarded as having expired.” Column 10, lines 23-26. It is not seen how this is related to the elements of claim 23 cited above.

Claim 24 is amended without prejudice for clarification to indicate “a plurality” of groups. Claim 24 as amended recites, “incrementing the indication after a predefined number of instances of programming of ones of the plurality of groups have occurred.” In contrast, the cited portions of Uno (column 1, lines 40-67 and column 7, lines 49 *et seq.*) appear to disclose incrementing an indication for a block each time that block is erased. “Each time erase operation is executed in the block, the value written in the field is incremented by 1.” Column 7, lines 49-50. This does not appear to teach incrementing after a predefined number of instances of programming ones of the plurality of groups. Therefore, claim 24 is believed to distinguish over the cited portions of Uno.

Claim 25 is amended without prejudice for clarification. Claim 25 as amended recites, “associating a first one of the plurality of indications to a first two or more groups of cells being programmed until said first one of the plurality of indications has been assigned to a predefined number of programmed groups of cells.” No such associating appears to be taught by the cited portions of Uno. In particular, as discussed above, Uno discloses, “Each time erase operation is executed in the block, the value written in the field is incremented by 1,” column 7, lines 49-50. Thus, claim 25 is additionally distinguished over the cited portions of Uno.

In summary, no *prima facie* case of anticipation by Uno has been presented with respect to claims 15-27 and it does not appear that the cited portions of Uno would support a rejection of these claims as anticipated. The above comments are made without prejudice to highlight a few of the claim elements of claims 15-27 that do not appear to be taught by Uno. These claim elements are exemplary and are not intended to form an exhaustive list.

Claims 24-27 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,572,466 to Sukegawa et al. (“Sukegawa”). Because specific features of Sukegawa have not been identified as anticipating all claim elements of claims 24-27, no *prima facie* case of anticipation is made with respect to claims 24-27. In addition, it is not seen how such a rejection could be supported by the cited portions of Sukegawa.

Claim 24 as amended recites, “incrementing the indication after a predefined number of instances of programming of ones of the plurality of groups have occurred.” In contrast, one cited portion of Sukegawa discloses, “This rewrite count data is incremented every time the accessed block is rewritten,” column 3, lines 41-42. Other cited portions of Sukegawa do not appear to disclose the incrementing of claim 24 either. Thus, it is not seen how the cited portions of Sukegawa could support an anticipation rejection of claim 24.

Claim 25 as amended recites, “associating a first one of the plurality of indications to a first two or more groups of cells being programmed until said first one of the plurality of indications has been assigned to a predefined number of programmed groups of cells.” The Office Action cited column 5, lines 46 *et seq.* of Sukegawa as teaching these claim elements. However, the cited text does not appear to teach any features that could be considered to correspond to the above claim elements. Instead, the cited text appears related to logical-to-physical mapping. “With the above described semiconductor memory system ... the contents of

the allocation are stored as address conversion information used for converting the logical address from the host system into the real memory address.” Column 5, lines 46-50. Thus, it is not seen how this text would support an anticipation rejection of claim 25.

Claim 26 recites, “the plurality of indications include a plurality of sequential numbers.” The Office Action cited column 5, lines 8 *et seq.* as teaching these claim elements. However, the cited text appears to refer to assignment of sector number sets to chips for parallel access. “Means for assigning sequential sector number sets to sequential flash EEPROM chips so as to permit the memory access means to parallelly access the plurality of flash EEPROM chips.” Column 5, lines 8-11. The relationship between sector number sets and the indications of claim 26 is not understood and it is not apparent which other features of the cited text could correspond to the elements of claim 26 above.

In summary, no *prima facie* case of anticipation by Sukegawa has been shown with respect to claims 24-27 and it does not appear that the cited portions of Sukegawa would support a rejection of claims 24-27 as anticipated. The above comments are made without prejudice to highlight a few of the claim elements of claims 24-27 that do not appear to be taught by Sukegawa. These claim elements are exemplary and are not intended to form an exhaustive list.

#### **Claim Rejections Under 35 U.S.C. § 103**

Claim 2 is rejected under 35 U.S.C. § 103(a) as being obvious over Miyauchi. Claim 2 depends from claim 1 and, because all the elements of claim 1 were not shown to be taught by Miyauchi as previously discussed, claim 2 includes elements that were not shown to be taught by Miyauchi and have not shown to be taught or suggested elsewhere. Thus, claim 2 is submitted to be allowable over Miyauchi.

In addition, no *prima facie* case of obviousness is stated with respect to claim 2. Claim 2 recites, “deleting a number of units from each of the zones less than ten percent of the units within the zone and adding said number of units to an adjacent zone.” The Office Action conceded that these claim elements were not taught by Miyauchi. The Office Action asserted “it would have been obvious to one having ordinary skill in the art at the time the current invention was made to minimize the number of deleted units from each zone to be less than the ten percent of the total memory units in order for the system to maintain enough operational memory area, minimizing data operational errors which results to [sic] enhancing of system reliability,

therefore being advantageous.” Thus, though not well understood, the rejection appears to be based on modifying the teaching of Miyauchi for at least one of two reasons, to maintain “enough operational memory area,” and/or “minimizing data operational errors,” both of which are considered advantageous by the Office Action. However, it is not indicated where such motivation is found. Thus, no *prima facie* case of obviousness is stated. “To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.” MPEP 2143 (emphasis added). However, no motivation was indicated as being found in the reference. Thus, it appears that the Office Action considers the cited motivations as within “the knowledge generally available to one of ordinary skill in the art.” This factual assertion is challenged as not properly officially noticed and not properly based upon common knowledge (see MPEP 2144.03 C.) If this rejection is maintained, it is requested that official notice be taken of any factual assertions made in the rejection, and that a technical line of reasoning underlying the decision to take such notice be provided (see MPEP 2144.03 B).

Certain other assertions made with respect to claim 2 do not appear to be relied upon in making the rejection. “The number of units being deleted from each zone is a system dependent feature ... neither the specification nor the claims teach or define the system operation is being different [sic] for any variation of the number of units being deleted from each zone.” Office Action, bottom of page 13 and continuing onto page 14. Because these assertions do not appear to be related to the rejection and the assertions are not well understood, no position is taken with respect to these assertions. However, if the rejection is in some way based on these assertions, it is requested that clarification be provided so that the assertions may be fully understood and that either documentary evidence be provided or official notice be taken as to the facts asserted.

#### **New Claim**

New claim 28 is added and is believed to be supported throughout the specification, in particular by paragraphs [0117]-[0122] discussing “Hot Counts.”



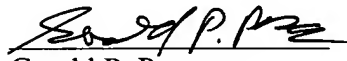
**Information Disclosure Statement**

It is noted that the Examiner has considered all references submitted in Information Disclosure Statements dated February 24, 2004 and October 17, 2005. However, reference No. 6, an International Search Report from a related PCT application, cited in a Supplemental Information Disclosure Statement dated April 23, 2004 remains unacknowledged. Attached is a copy of the partially initialed PTO Form 1449. It is respectfully requested that this reference be considered and the PTO Form 1449 be initialed and returned with the next Action.

**Conclusion**

Accordingly, it is believed that this application is now in condition for allowance and an early indication of its allowance is solicited. However, if the Examiner has any further matters that need to be resolved, a telephone call to the undersigned attorney at 415-318-1160 would be appreciated.

Respectfully submitted,



Gerald P. Parsons  
Reg. No. 24,486

March 17, 2006  
Date

PARSONS HSUE & de RUNTZ LLP  
595 Market Street, Suite 1900  
San Francisco, California 94105  
Telephone: 415.318.1160 (main)  
Telephone: 415.318.1163 (direct)  
Fax: 415.693.0194

U.S. Department of Commerce, Patent and Trademark Office  
**INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

(Use several sheets if necessary)

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Applicant(s)

Carlos J. Gonzalez and Kevin M. Conley

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## U.S. Patent Documents

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
TN.	1	5,572,466	Nov. 5, 1996	Sukegawa			
TN.	2	5,963,474	Oct. 5, 1999	Uno et al.			
TN.	3	6,167,483	Dec. 26, 2000	Miyauchi			

## U.S. Published Patent Application Documents

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate

## Foreign Patent Documents

							Translation	
		Document	Date	Country	Class	Subclass	Yes	No
TN.	4	0544252 A2	Jun. 2, 1993	Europe				
TN.	5	19718479 C1	Sep. 24, 1998	Germany			Abstract	

## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	6	"Notification of Transmittal of the International Search Report or the Declaration", corresponding PCT application no. PCT/US01/30342, International Searching Authority, European Patent Office, 9/10/2003, 7 pages						

Examiner

Tuan Tran

Date Considered

11/07/05

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.